

CLAIMS:

1. Record carrier of a writable type for recording information by writing marks in a track on a recordable area of a recording layer via a beam of radiation entering through an entrance face of the record carrier, the marks being detectable during scanning the track via the beam by a first type of variations of the radiation, the record carrier comprising
 - 5 - at least a first recording layer (40) and a second recording layer (41), the first recording layer being present at a position closer to the entrance face than the second recording layer, and
 - at least one transparent spacer layer (42) between the recording layers, and
 - each layer comprising a pregroove (14) indicating the position of the track, the pregroove
 - 10 exhibiting a wobble constituted by displacements of the pregroove in a direction transverse to the longitudinal direction of the track, the wobble exhibiting a wobble modulation for representing physical address information indicating the physical position of the physical address with respect to a starting point of the track and the pregroove exhibiting a pregroove modulation (13) constituted by variations of a physical parameter related to the shape of the
 - 15 pregroove, the pregroove modulation representing auxiliary control information, the wobble modulation being detectable during said scanning by a second type of variations of the radiation and the pregroove modulation being detectable during said scanning by further variations of said first type.
- 20 2. Record carrier as claimed in claim 1, wherein said first type of variations are variations of a reflection level of the track for the radiation.
3. Record carrier as claimed in claim 1, wherein the pregroove modulation is constituted by variations of the depth or width of the pregroove.
- 25 4. Record carrier as claimed in claim 3, wherein the pregroove modulation comprises pregroove land areas (19) of zero depth alternating with pregroove pit areas (18) of a predefined depth and width for constituting a pattern of pregroove marks representing the auxiliary control information.

5. Record carrier as claimed in claim 1, wherein said marks in the track have lengths corresponding to an integer number of channel bit lengths T and the shortest marks having a length of a predefined minimum number d of channel bit lengths T for being
5 detectable via a scanning spot having an effective diameter constituted by said beam on the track, and the pregroove modulation is constituted by a carrier pattern of long pregroove marks, the long pregroove marks having lengths of at least two times the predefined minimum number d of channel bit lengths T for being substantially longer than the effective diameter of the scanning spot.
- 10 6. Record carrier as claimed in claim 5, wherein the predefined minimum number d is 3 channel bit lengths T ($d = 3T$), and the long marks have lengths of at least $6T$, in particular the lengths being in the range of $8T$ to $14T$.
- 15 7. Record carrier as claimed in claim 4 or 5, wherein the pregroove modulation is representing the auxiliary control information encoded by the pregroove marks according to a predefined channel coding algorithm, which predefined channel coding algorithm differs from a channel coding algorithm for encoding the information in the marks in the track.
- 20 8. Record carrier as claimed in claim 1, wherein the pregroove modulation is aligned with the wobble modulation.
9. Record carrier as claimed in claim 1 or 2, wherein each recording layer comprises a disc information area (12) in which area the pregroove exhibits said pregroove
25 modulation, the disc information area being substantially smaller than the recordable area of the recording layer, and the disc information areas of the recording layers being located at substantially corresponding radial positions.
10. Device for scanning a track on a record carrier (11) via a beam of radiation
30 (24), the track comprising marks on a recordable area of a recording layer, the beam entering through an entrance face of the record carrier and constituting a scanning spot having an effective diameter on the track, the record carrier comprising

- at least a first recording layer (40) and a second recording layer (41), the first recording layer being present at a position closer to the entrance face than the second recording layer, and
 - at least one transparent spacer layer (42) between the recording layers, and
- 5 - each layer comprising a pregroove indicating the position of the track, the pregroove exhibiting a wobble constituted by displacements of the pregroove in a direction transverse to the longitudinal direction of the track, the wobble exhibiting a wobble modulation for representing physical address information indicating the physical position of the physical address with respect to a starting point of the track and the pregroove exhibiting a pregroove modulation constituted by variations of a physical parameter related to the shape of the
- 10 pregroove, the pregroove modulation representing auxiliary control information, the device comprising
- a head (22) for providing the beam,
 - a front-end unit (31) for generating a scanning signal (33) for detecting marks in the track
- 15 by detecting scanning signal variations due to a first type of variations of the radiation,
- wobble detection means (36) for retrieving the physical address information from the wobble modulation by detecting a second type of variations of the radiation, and
 - pregroove demodulation means (32) for retrieving the auxiliary control information from the pregroove modulation on the first and the second recording layer by detecting further
- 20 scanning signal variations due to the first type of variations of the radiation.

11. Device as claimed in claim 10, wherein, while on the record carrier said marks have lengths corresponding to an integer number of channel bit lengths T and the shortest marks having a length of a predefined minimum number d of channel bit lengths T for being
- 25 detectable via the scanning spot having the effective diameter, and the pregroove modulation is constituted by a carrier pattern of long pregroove marks, the long pregroove marks having lengths of at least two times the predefined minimum number d of channel bit lengths T for being substantially longer than the effective diameter of the scanning spot,
- the pregroove demodulation means (32) are arranged for detecting the further scanning signal
- 30 variations due to the long pregroove marks.

12. Device as claimed in claim 10 or 11, wherein the pregroove demodulation means (32) are arranged for retrieving the auxiliary control information encoded in the pregroove modulation according to a predefined channel coding algorithm, which predefined

channel coding algorithm differs from a channel coding algorithm for encoding the information in the marks in the track.

13. Device as claimed in claim 10, 11 or 12, wherein the device comprises a
- 5 control unit (20) for first retrieving the auxiliary control information via the pregroove demodulation means (32) and subsequently recording the auxiliary control information in a control area of the record carrier.